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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/735,166	12/12/00	MANTELL	D XXT-056

000959
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MMC2/1024

EXAMINER

MOUTTET, B

ART UNIT

PAPER NUMBER

2853

DATE MAILED: 10/24/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/735,166	Applicant(s) MANTELL, DAVID A.	
	Examiner Blaise L Mouttet	Art Unit 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 10 is objected to because in line 2 "(a)" should be placed after "adjusting at least one of". Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-8, 10, 12, 14, 16, 17 and 19-23 are rejected under 35

U.S.C. 102(b) as being anticipated by Sohi et al. US 4,626,867.

Sohi et al. discloses, regarding claims 1, a method for forming an image comprising:

discharging ink droplets (31) from a print head (1) onto an imaging medium to form an image (see column 1, lines 25-30); and

measuring the difference between a parameter of a first ink droplet and a parameter of a second ink droplet (see column 1, lines 42-49 and column 4, lines 30-40).

Regarding claims 2 and 8, the velocity of the drops are compared to balance the operation of the ejectors (column 4, lines 30-40).

Regarding claim 3, the pulse width or amplitude is adjusted to compensate for velocity differences (column 4, lines 30-40).

Regarding claim 4, as described in column 4, lines 30-40 and shown in figure 5, it is clear that the ejector controller (17) stores the measured difference between a number of ejectors in an array in order to adjust a drive pulse according to measured differences between ink drops ejected by the ejectors.

Regarding claim 5, as described in column 2, lines 60-61 and column 4, lines 15-20 it is clear that a velocity profile is generated and in column 4, lines 30-40 variation in the velocity profile is compensated for by adjusting the pulse width and/or amplitude.

Regarding claim 6, see column 4, lines 32-36.

Regarding claim 7, see column 4, lines 36-40.

Regarding claim 10, see column 4, lines 32-34.

Regarding claim 12, the pulse width (column 4, line 40) is a time interval adjusted to compensate for deviation in drop position.

Regarding claim 13, see column 4, lines 15-20 and 30-40.

Regarding claims 14 and 16, see column 4, lines 15-40 and 57-66.

Regarding claim 17, Sohl et al. discloses a printhead (1), processor (17) for controlling the printhead and a printhead facility (24) for detecting the velocity of ink drops coupled to the processor for controlling the printhead based on a difference between a first and second parameter (column 4, lines 30-40).

Regarding claims 19-21, see column 4, lines 30-40.

Regarding claim 22, see figure 3.

Regarding claim 23, see column 4, lines 15-20.

3. Claims 1, 4, 7, 12-14, 17, 19, 22 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Furukawa et al. US 4,626,867.

Furukawa et al. discloses, regarding claims 1 and 14, a method for forming an image comprising:

discharging ink droplets from a printhead (9) onto an imaging medium to form an image (column 2, lines 27-33); and

measuring the difference between a parameter (position, time) of a first droplet and a parameter of a second droplet when deposited on a print medium (column 2, lines 33-40 and 49-54).

Regarding claims 4, 7, 12 and 13, as shown in figures 6A-6C, the timings (T1-T3) between detection of drops from heads 9₁, 9₂, 9₃ and 9₄ is stored in register 1, 2 and 3 and the start timing of printing is controlled based on these timings (column 2, lines 38-40).

Regarding claims 17, 19, 22 and 23, Furukawa et al. shows in figure 5 a printhead (9), processor (35) and a printhead facility, as shown in figure 5, coupled to the processor for controlling the printhead based on a difference between timings and positions of the droplets (column 2, lines 33-40 and 49-54).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 9, 15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sohl et al. US 4,509,057 in view of Niikura et al. US 5,576,744.

Sohl et al. fails to disclose determining an air gap distance between the imaging medium and the printhead and controlling the discharge of ink based on the air gap distance.

Niikura et al. teaches acquiring distance information between a plurality of recording elements and a print medium using this information to adjust printing timing (column 6, lines 30-42).

It would have been obvious to a person of ordinary skill in the art to determine an air gap distance between the imaging medium and the array of ejectors disclosed by Sohl et al. and use this information to control ink discharge as taught by Niikura et al.

The motivation for doing so would have been to prevent the formation of a slanted image due to a variable air gap (such as when printing on a curved drum) as taught by column 14, line 66 -column 15, line 8 of Niikura et al.

5. Claims 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sohl et al. US 4,509,057 in view of Moriyama US 4,847,638.

Sohl et al. fails to disclose a step of determining a variation between the first and second droplets to compensate for image medium thickness.

Moriyama teaches determining a variation in the timing between ink discharges in an ink jet printer on the basis of the detection of paper thickness (see abstract).

It would have been obvious for a person of ordinary skill in the art to determine a variation in the timing between ink discharges in the method of Sohl et al. on the basis of paper thickness as taught by Moriyama.

The motivation for doing so would have been in order to minimize ink drop placement deviation as taught by column 2, lines 48-53 of Moriyama et al.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Weber et al. US 4,328,504 discloses optical sensing of ink jet droplets on a printing medium to detect drop deviation.

Shibata et al. US 5,477,244 discloses optically detecting the difference between parameters of ink droplets in order to compensate for drop deviation (see column 29, lines 62-67).

Miyake et al. US 6,128,261 discloses optically detecting the difference between parameters of ink droplets in order to compensate for drop deviation (see column 7, lines 1-12).

Contact Information

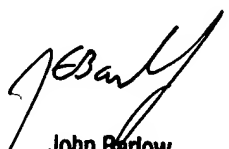
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Blaise Mouttet whose telephone number is (703) 305-3007. The examiner can normally be reached on Monday-Friday from 8:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow, Jr. Art Unit 2853, can be reached on, (703) 308-3126. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3432.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Blaise Mouttet October 16, 2001

Bm OCT 16, 2001


John Barlow
Supervisory Patent Examiner
Technology Center 2800